



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/398,502	09/17/1999	HABIB RIAZI	3-11-3	1176
7590 11/01/2005			EXAMINER	
KEVIN M MASON RYAN, MASON & LEWIS, LLP 1300 POST ROAD SUITE 205 FAIRFIELD, CT 06430			DUONG, DUC T	
			ART UNIT	PAPER NUMBER
			2663	
DATE MAILED: 11/01/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/398,502

Applicant(s)

RIAZI ET AL.

Examiner

Duc T. Duong

Art Unit

2663

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 22 August 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

2. Claims 1-22 are rejected under 35 U.S.C. 102(e) as being anticipated by Sayeed (US Patent 6,594,320 B1).

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

Regarding to claims 1 and 7, Sayeed discloses an orthogonal frequency division multiplexing OFDM transmitter (fig. 1) for transmitting an OFDM signal having a plurality of sub-carriers (col. 4 lines 9-21), comprising a differential encoder 130 for modulating said OFDM signal in the frequency domain using adjacent sub-carriers to produce differentially encoded symbols (fig. 1 col. 4 lines 31-33); an IFFT buffer 140 for storing said differentially encoded symbols and one or more pilot tones to produce an analog signal centered at a desired carrier frequency (fig. 4a-c col. 4 lines 36-60); and a transformer 150 for creating said OFDM signal (fig. 1 col. 5 lines 61-65).

Regarding to claims 2 and 8, Sayeed discloses the transformer 150 implements an Inverse Fast Fourier Transform (fig. 1 col. 5 lines 6-8).

Regarding to claims 3 and 9, Sayeed discloses the transformer 150 implements an orthogonal transformation (it is inherent in OFDM system the transformer implements an orthogonal transformation).

Regarding to claims 4 and 10, Sayeed discloses the transformer 150 generates said OFDM signal with a plurality of sub-carriers for carrying data (fig. 1 col. 4 lines 36-55).

Regarding to claims 5 and 11, Sayeed discloses at least one unmodulated sub-carrier (spectral null) generated by said transforming step is allocated as a pilot bin to provide a reference within each OFDM symbol (fig. 4a col. 4 lines 39-42).

Regarding to claims 6 and 12, Sayeed discloses the differential encoding 130 is performed with respect to consecutive sub-carriers in said OFDM system (fig. 2 col. 4 lines 31-33; noted the equation deriving the complex elements suggest of consecutive sub-carriers processing).

Regarding to claims 13 and 18, Sayeed discloses an orthogonal frequency division multiplexing OFDM receiver (fig. 20 for receiving an OFDM signal having a plurality of sub-carriers (col. 5 lines 39-46), comprising a transformer 220 for recovering said OFDM signal having a plurality of sub-carriers (fig. 2 col. 5 lines 46-48), wherein said recovered signal contains differentially encoded symbols and one or more pilot tones and wherein said recovered signal is centered at a desired carrier frequency (fig. 4a-c col. 5 lines 48-50); and a differential decoder 230 for demodulating said OFDM signal in the frequency domain wherein said differential decoding is performed using adjacent sub-carriers (fig. 2 col. 5 lines 51-55).

Regarding to claims 14 and 19, Sayeed discloses the transformer 220 implements a Fast Fourier Transform (fig. 2 col. 5 lines 46-48).

Regarding to claims 15 and 20, Sayeed discloses the transformer 220 implements an orthogonal transformation (it is inherent in OFDM system the transformer implements an orthogonal transformation).

Regarding to claims 16 and 21, Sayeed discloses at least one unmodulated sub-carrier (spectral null) generated by said transforming step is allocated as a pilot bin to provide a reference within each OFDM symbol (fig. 4a col. 4 lines 39-42).

Regarding to claims 17 and 22, Sayeed discloses the differential decoding 230 is performed with respect to consecutive sub-carriers in said OFDM system (fig. 2 col. 4 lines 31-33; noted the equation deriving the complex elements suggest of consecutive sub-carriers processing).

### ***Response to Arguments***

3. Applicant's arguments filed August 22, 2005 have been fully considered but they are not persuasive. Regarding to applicant's argument on page 2, with respect to Sayeed fails to teach for storing pilot tone(s). In reply, the examiner would like to direct applicant to fig. 4A col. 4 lines 38-42. Herein, Sayeed discloses of storing a spectral null (pilot tone) with a zero complex value in the location 400 of the buffer 140. Thus, Sayeed indeed discloses of storing pilot tone(s). Based on the reasons set forth the rejections are maintained.

### ***Conclusion***

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

Art Unit: 2663


the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Duc T. Duong whose telephone number is 571-272-3122. The examiner can normally be reached on M-F (9:00 AM-5:00 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Q. Ngo can be reached on 571-272-3139. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DD  
DD

  
RICKY NGO  
PRIMARY EXAMINER  
10/27/05